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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/876,324

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Chandler J. Kennedy

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12/23/2003

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EXAMINER

LANDAU, MATTHEW C

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 12/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/876,324

Applicant(s)

KENNEDY, CHANDLER J.

Examiner

Matthew Landau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 8, 17 and 26-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4, 26-32 and 35 is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 6, 8, 17 and 37 is/are rejected.
- 7) ☒ Claim(s) 33, 34 and 36 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

The drawings were received on October 16, 2003. These drawings are acceptable.

Claim Objections

Claim 17 is objected to because of the following informalities: the limitation “along optical-quality interface” should be replaced with “along an optical-quality interface”.

Furthermore, it is unclear how the side surfaces can be “tilted inwardly from the bottom surface”.

Applicant should consider amending the claims using wording similar to that of claim 5.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5, and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by Kuper et al. (US Pat. 4,949,346, hereinafter Kuper).

In regards to claim 1, Figure 2 of Kuper discloses an optically pumped laser device, comprising: a nonionic (sapphire) base layer (lower part of 2) (column 2, lines 51-53) having an upper surface and a lower surface, a surface area of said lower surface being greater than a surface area of said upper surface; and an ionic layer 1 (Nd:YAG) (column 3, line 66) attached to

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said upper surface of said nonionic base layer through an optical-quality interface 5, a cross-section through said device in a direction perpendicular to said interface having a trapezoidal shape, parallel lines of said trapezoidal shape being parallel to said interface.

In regards to claim 2, Kuper discloses the optical-quality interface 5 is a diffusion-bonded interface (column 3, lines 7-13).

In regards to claim 3, the product-by-process limitation "wherein said optical-quality interface is a layer-growth type interface" does not structurally distinguish the claimed invention over the prior art.

In regards to claims 5 and 37, Figure 2 of Kuper discloses a nonionic (sapphire) base layer 2; and an ionic layer 1 (Nd:YAG) (column 3, line 66) attached to said nonionic base layer through an optical-quality interface, a cross-section through said device in direction perpendicular to said interface having a trapezoidal shape, wherein said nonionic layer and said ionic layer form a laser slab, said laser slab having a bottom surface and two side surfaces, an angle between said side surfaces and said bottom surface being about 60 degrees.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 6 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuper in view of Meissner et al. (US Pat. 5,936,984, hereinafter Meissner) and Fulbert et al. (US Pat. 6,014,393, hereinafter Fulbert).

In regards to claims 6 and 17, Figure 2 of Kuper discloses a nonionic layer 2 (lower part); and an ionic layer 1 (Nd:YAG) attached to said nonionic layer along an optical-quality interface by diffusion bonding (column 3, lines 7-13), a cross-section through said laser slab in any plane perpendicular to said optical-quality interface having a trapezoidal shape, said laser slab having a bottom surface and two side surfaces tilted inwardly from the bottom surface at an angle of about 60 degrees. A difference between Kuper and the claimed invention the nonionic layer is YAG and the ionic layer is Yb:YAG. Figure 3 of Meissner disclose a laser having a YAG layer joined to an Yb:YAG layer at an optical quality interface. In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention of Kuper by using Yb:YAG as the ionic layer for the purpose of decreasing sensitivity to the pump light wavelength (column 1, lines 33-36). It is further obvious to use YAG as the nonionic layer as taught by Meissner to simplify the production process. A further difference between Kuper and the claimed is having an ytterbium concentration of about 15%. Fulbert discloses a YAG based laser material doped with active ions (Nd), wherein the active ion concentration is 15% (column 5, lines 40-60). In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention of Injeyan by using an active ion concentration of about 15%. The ordinary artisan would have been motivated to modify Injeyan in the manner described above for the purpose of improving the pumping efficiency (column 2, lines 13-21). Note that the ordinary artisan would reasonably expect to obtain similar

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results using ytterbium in place of neodymium, since they are both rare earth elements and have similar properties.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuper in view of Tajima.

The difference between Kuper and the claimed invention is said ionic layer has an isolation groove. Figure 1 of Tajima discloses a laser medium with an ionic layer 12 attached to a nonionic layer 11, wherein the ionic layer 12 has an isolation groove 15. In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention of Injeyan by including an isolation groove in the ionic layer. The ordinary artisan would have been motivated to modify Kuper in the manner described above for the purpose of suppressing parasitic oscillation (column 6, lines 5-13).

Allowable Subject Matter

The indicated allowability of claims 5 and 17 are withdrawn in view of the newly discovered reference(s) to Kuper.

Claims 33, 34, and 36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 4, 26-32, and 35 are allowed.

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Response to Arguments

Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew C. Landau whose telephone number is (703) 305-4396.

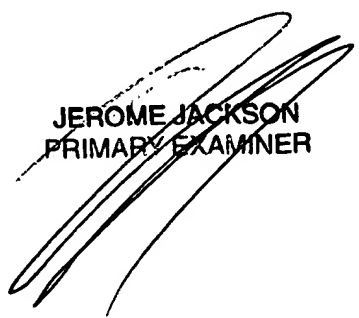
The examiner can normally be reached from 8:30 AM - 5:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (703) 308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Matthew C. Landau

Examiner

December 18, 2003


JEROME JACKSON
PRIMARY EXAMINER